About the National Institutes of Health

The National Institutes of Health (NIH), the world's top medical research center, is charged with addressing the health concerns of the nation. The NIH is the largest U.S. governmental sponsor of health studies conducted nationwide.

Simply described, the NIH's goal is to acquire new knowledge to help prevent, detect, diagnose, and treat disease and disability, from the rarest genetic disorder to the common cold. The NIH works toward that goal by conducting research in its own laboratories in Bethesda, Maryland, and at several other locations throughout the United States; supporting the research of nonfederal scientists throughout the country and abroad; helping to train research investigators; and fostering communication of medical information to the public.

The NIH Supports Research

A principal concern of the NIH is to invest wisely the tax dollars entrusted to it for the support and conduct of medical research. Approximately 82 percent of the investment is made through grants and contracts supporting research and training in more than 2,000 universities, medical schools, hospitals, and research institutions throughout the United States and abroad.

Approximately 10 percent of the budget goes to more than 2,000 projects conducted mainly in NIH laboratories. About 80 percent covers support costs of research conducted both within and outside the NIH.

NIH Research Grants

To apply for a research grant, an individual scientist must submit an idea in a written application. Each application undergoes a peer review process. A panel of scientific experts, who are active researchers in the medical sciences, first evaluates the scientific merit of the application. Then, a national advisory council or board, composed of eminent scientists as well as public members who are interested in health issues or the medical sciences, determines the project's overall merit and priority. Because funds are limited, the process is very competitive.

The Nobelists

The rosters of those who have conducted research, or who have received NIH support over the years, include

About the National Institute of Allergy and Infectious Diseases

The National Institute of Allergy and Infectious Diseases (NIAID) had its origins in the earliest days of the Public Health Service. In 1948, the Rocky Mountain Laboratory and the Biologics Control Laboratory, both dating to 1902, joined the Division of Infectious Diseases and the Division of Tropical Diseases of the National Institutes of Health to form the National Microbiological Institute. Six years later, Congress gave the institute its present name to reflect the inclusion of allergy and immunology research. Today, NIAID provides the major support for scientists conducting research aimed at developing better ways to diagnose, treat, and prevent the many infectious, immunologic, and allergic diseases that afflict people worldwide.

NIAID is composed of four extramural divisions: the Division of AIDS; the Division of Allergy, Immunology, and Transplantation; the Division of Microbiology and Infectious Diseases; and the Division of Extramural Activities. In addition, NIAID scientists conduct intramural research in laboratories located in Bethesda, Rockville, and Frederick, Maryland, and in Hamilton, Montana.

Following is a brief description of the major areas of investigation.

Acquired Immunodeficiency Syndrome (AIDS)

NIAID is responsible for conducting and supporting basic research on the pathogenesis of the human immunodeficiency virus (HIV), which causes AIDS; developing new drug therapies; conducting clinical trials of promising experimental drugs for HIV infection and related opportunistic infections and cancers; carrying out epidemiologic studies to assess the impact of HIV on the populations most severely affected by the epidemic; and developing and testing HIV vaccines.

Asthma and Allergic Diseases

Research on asthma and allergies has revealed much about their underlying mechanisms and contributed to the

some of the world's most illustrious scientists and physicians. Among them are 97 scientists who have won Nobel Prizes for achievements as diverse as deciphering the genetic code and learning what causes hepatitis.

Five Nobelists made their prize-winning discoveries in NIH laboratories: Doctors Christian B. Anfinsen, Julius Axelrod, D. Carleton Gajdusek, Marshall W. Nirenberg, and Martin Rodbell.

Impact of the NIH on the Nation's Health

The research programs of the NIH have been remarkably successful during the past 50 years. NIH-funded scientists have made substantial progress in understanding the basic mechanisms of disease and have vastly improved the preventive, diagnostic, and therapeutic options available.

During the last few decades, NIH research played a major role in making possible achievements like these:

- Mortality from heart disease, the number one killer in the United States, dropped by 36 percent between 1977 and 1999.
- Improved treatments and detection methods increased the relative five-year survival rate for people with cancer to 60 percent.
- Those suffering from depression now look forward to returning to work and leisure activities, thanks to treatments that give them an 80 percent chance to resume a full life in a matter of weeks.
- Vaccines protect against infectious diseases that once killed and disabled millions of children and adults.
- In 1990, NIH researchers performed the first trial of gene therapy in humans. Scientists are increasingly able to locate, identify, and describe the functions of many of the genes in the human genome. The ultimate goal is to develop screening tools and gene therapies for the general population for cancer and many other diseases.

Educational and Training Opportunities at the NIH

The NIH offers myriad opportunities including summer research positions for students. For details, visit http://science.education.nih.gov/students.

For more information about the NIH, visit http://www.nih.gov.

The NIH Office of Science Education

The NIH Office of Science Education (OSE) is bringing exciting new resources free of charge to science

development of new ways to help affected individuals. NIAID has established a network of asthma, allergic, and immunologic diseases research centers to transfer results rapidly from fundamental studies in immunology and clinical studies of allergy to clinical practice. The institute also supports the National Cooperative Inner-city Asthma Study to define factors that influence the disease's severity and to design and evaluate programs to reduce asthma episodes and deaths among African-American and Hispanic children.

Emerging Diseases

New diseases are arising worldwide and old diseases are re-emerging as infectious agents evolve or spread, and as changes occur in ecology, socioeconomic conditions, and population patterns. NIAID conducts and supports research on Lyme disease, hantavirus, multidrug-resistant tuberculosis, and other emerging diseases to develop new or improved diagnostics, treatments, and vaccines.

Enteric Diseases

Worldwide, diarrheal diseases such as cholera and rotavirus infection are major causes of illness and death in infants and children. In contrast, viral hepatitis in its various forms can cause severe disease in older children and adults, although it produces few symptoms among younger age groups. NIAID supports basic research on how enteric agents cause illness as well as studies aimed at developing and testing vaccines to prevent enteric infections.

Genetics and Transplantation

NIAID supports studies aimed at improving immunosuppressive therapies, further developing reagents needed for precise tissue matching, defining the genetic regulation of the immune response, and understanding the molecular mechanisms that control immune system genes. NIAID is participating in the first NIH cooperative clinical trial in kidney transplantation, designed to translate developments in basic research into new therapies to prevent graft rejection.

Immunologic Diseases

The immune system is a complex network of specialized organs and cells that has evolved to defend the body against attacks by foreign invaders. When functioning properly, the

teachers of grades kindergarten through 12. OSE learning tools support teachers in training the next generation of scientists and scientifically literate citizens. These materials cover information not available in standard textbooks and allow students to explore biological concepts using real world examples. In addition to the curriculum supplements, OSE provides a host of valuable resources accessible through the OSE Web site http://science.education.nih.gov/, such as:

- **Snapshots of Science and Medicine**.[2] This online magazine—plus interactive learning tools—is designed for ease of use in high school science classrooms. Three issues, available for free, are published during the school year. Each focuses on a new area of research and includes four professionally written articles on findings, historical background, related ethical questions, and profiles of people working in the field. Also included are a teaching guide, classroom activities, handouts, and more. (http://science.education.nih.gov/snapshots)
- **Women Are Scientists Video and Poster Series**.[3] This series provides teachers and guidance counselors with free tools to encourage young women to pursue careers in the medical field. The informative, full-color video and poster sets focus on some of the careers in which women are currently underrepresented. The first set, titled "Women are Surgeons," has been completed. The second, "Women are Pathologists," will be finished in 2000, and the third, "Women are Researchers," in 2001. (http://science.education.nih.gov/women)
- **Internship Programs**. Visit the OSE Web site to obtain information on a variety of NIH programs open to teachers and students. (http://science.education.nih.gov/students)
- **National Science Teacher Conferences**. Thousands of copies of NIH materials are distributed to teachers for free at the OSE exhibit booth at conferences of the National Science Teachers Association and the National Association of Biology Teachers. OSE also offers teacher-training workshops at many conferences. (http://science.education.nih.gov/exhibits)

In the development of learning tools, OSE supports science education reform as outlined in the *National Science Education Standards* and related guidelines.

We welcome your comments about existing resources and suggestions about how we may best meet your needs. Feel free to send your comments to us at http://science.education.nih.gov/feedback.

2, 3 These projects are collaborative efforts between OSE and the NIH Office of Research on Women's Health.

system fights off infections by such agents as viruses and bacteria. A malfunction, however, can unleash an enormous variety of diseases from allergy to arthritis to cancer. NIAID research focuses on the basic biology of the immune system and mechanisms of immunologic diseases including autoimmune disorders.

Malaria and Other Tropical Diseases

Diseases such as malaria, filariasis, trypanosomiasis, and leprosy disable and kill millions of people worldwide. NIAID's research efforts in tropical medicine are conducted by U.S. and foreign investigators receiving institute support and by NIAID scientists in Bethesda, Maryland. NIAID supports a number of centers for tropical medicine research in countries where such diseases are endemic.

Sexually Transmitted Diseases (STDs)

More than 13 million Americans each year acquire infectious diseases other than AIDS through sexual contact. Such STDs as gonorrhea, syphilis, chlamydia, genital herpes, and human papillomavirus can have devastating consequences, particularly for young adults, pregnant women, and newborn babies. NIAID-supported scientists in STD Cooperative Research Centers, NIAID laboratories, and other research institutions are developing better diagnostic tests, improved treatments, and effective vaccines.

Vaccine Development

Effective vaccines have contributed enormously to improvements in public health in the United States during the last century. Research conducted and supported by NIAID has led to new or improved vaccines for a variety of serious diseases, including rabies, meningitis, whooping cough, hepatitis A and B, chicken pox, and pneumococcal pneumonia. NIAID supports vaccine evaluation units for the testing of new vaccines in people at a number of U.S. medical centers.

Other areas of research include fungal diseases, hospital-associated infections, chronic fatigue syndrome, respiratory diseases, and antiviral and antimicrobial drug development.

You can find more information on NIAID's research efforts at its Web site: http://www.niaid.nih.gov.